




EXHIBIT G

Charted Claims:

Non-method: 1

US9369575B2	HCL Sametime Application ("The accused instrumentality")
<p>1. A system for detecting or determining any given "VoIP (Voice over internet protocol) location" of any "VoIP enabled wireless device registered to the system" by extracting any such device's "VoIP address or return path" and storing it and updating it in one or more accessible databases, the system including a server, a VoIP enabled wireless device registered to the server and a software module downloadable from the server to the VoIP enabled wireless device, in which:</p>	<p>A system utilized by the accused instrumentality is a system for detecting or determining any given "VoIP (Voice over internet protocol) location" (e.g., IP address of a user device enabled with Sametime smartphone application) of any "VoIP enabled wireless device registered to the system" (e.g., a user device such as a smartphone enabled with Sametime smartphone application) by extracting any such device's "VoIP address or return path" (e.g., IP address of a user device enabled with Sametime smartphone application) and storing it and updating it in one or more accessible databases (e.g., Sametime smartphone application databases), the system including a server (e.g., Sametime server), a VoIP enabled wireless device registered to the server (e.g., a user device such as a smartphone enabled with Sametime smartphone application) and a software module (e.g., Sametime smartphone application) downloadable from the server (e.g., Sametime server) to the VoIP enabled wireless device (e.g., a user device such as a smartphone enabled with Sametime smartphone application).</p> <p>The system utilized by the accused instrumentality comprises a Sametime server, a user device such as a smartphone enabled with Sametime smartphone application and Sametime smartphone application. The Sametime smartphone application can be installed into a user smartphone device. The accused instrumentality also determines and collects IP address (i.e., VoIP address or VoIP location) of the user smartphone device.</p>

	<div data-bbox="719 204 792 272"></div> <div data-bbox="808 209 1198 268"><h1>HCL Sametime</h1></div> <div data-bbox="1856 213 2051 240">Resources  sc</div> <div data-bbox="710 384 1294 510"><h2>Secure conversations across every device.</h2></div> <div data-bbox="710 525 1417 630"><p>The proven and trusted persistent chat platform is being rebuilt for how today's modern organizations need to be working — nimbly, securely, and remotely.</p></div> <div data-bbox="759 697 965 726">SCHEDULE DEMO</div> <div data-bbox="1473 325 2051 735"></div> <div data-bbox="698 772 1328 813">https://www.hcltechsw.com/products/sametime</div>
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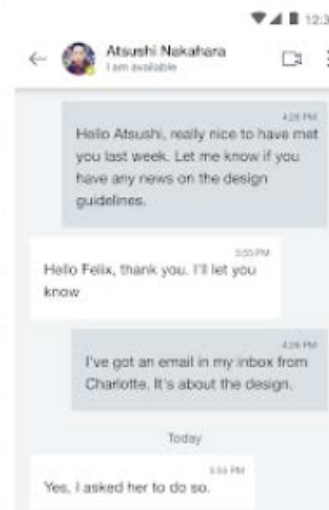
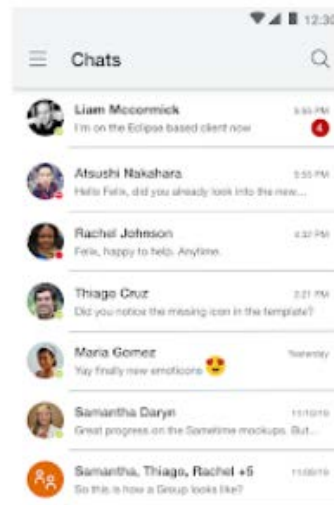
HCL Sametime

HCL Software Communication

3+

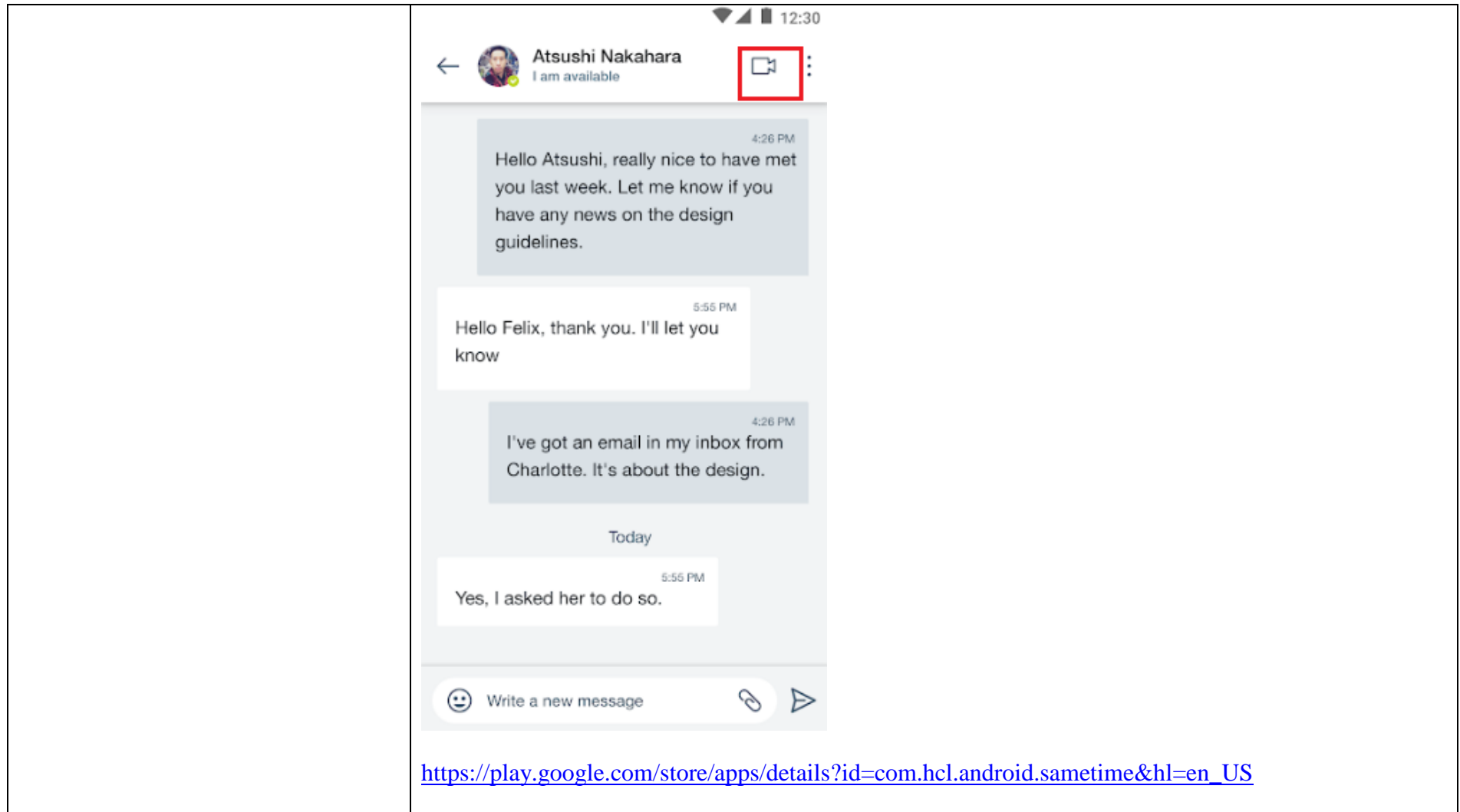
 This app is compatible with your device.

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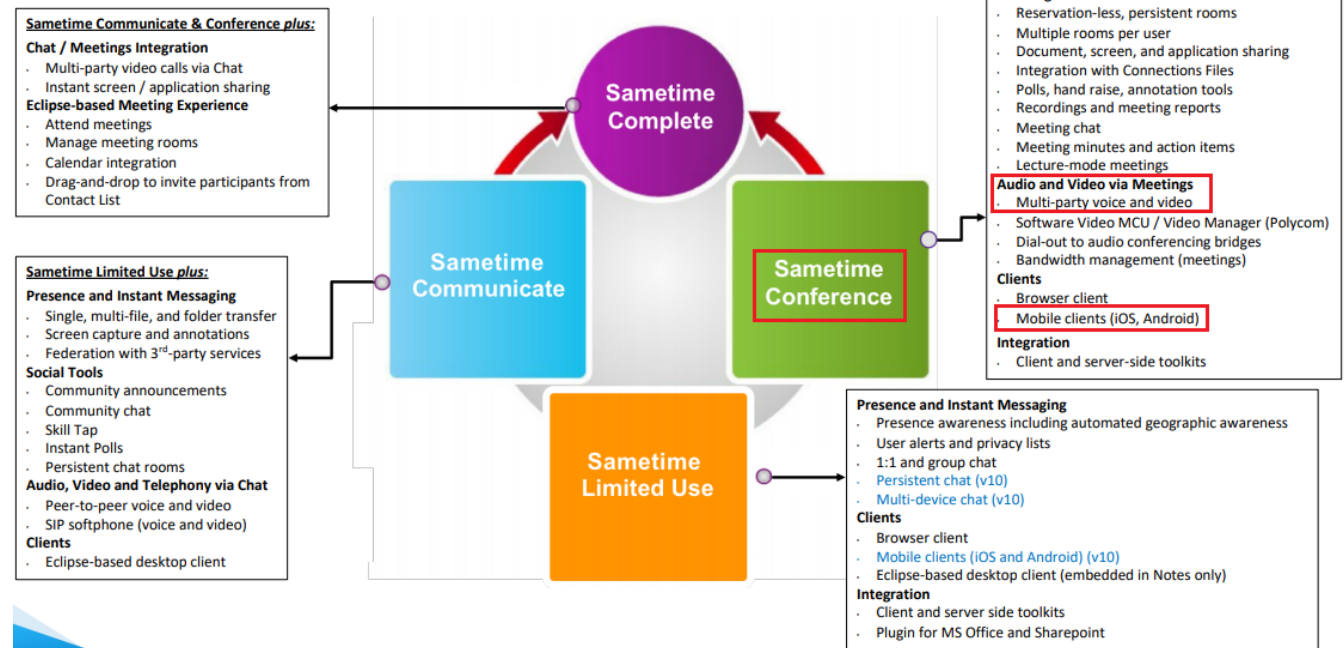
https://play.google.com/store/apps/details?id=com.hcl.android.sametime&hl=en_US

The accused instrumentality performs voice calling over IP network.



	<p><u>HCL Sametime is a highly secure, persistent team chat app for the HCL Sametime platform. It allows users to communicate securely in real-time across devices on web, desktop or mobile.</u></p> <p>It is ideal for cross-team chat in countries with strict data privacy and gravity laws, companies in regulated industries, and government entities who need to be able to ensure the security and auditability of their data. With v11, secure conversations just got a lot easier. From a new user experience to modernized industry-standard technologies, Sametime v11 the best, most feature-rich version yet.</p> <p>HCL Sametime works with your Sametime 10 and 11 server infrastructure.</p> <p>https://play.google.com/store/apps/details?id=com.hcl.android.sametime&hl=en_US</p>
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IBM/HCL Sametime Product Family Today

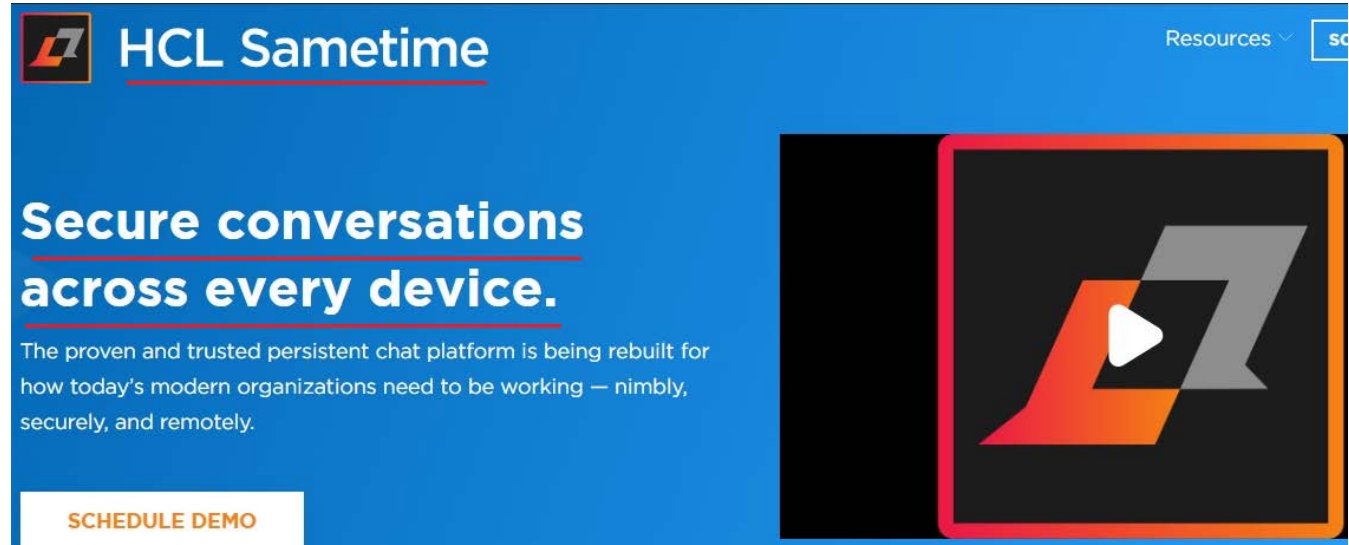


https://www.cwpcollaboration.com/uploads/1/0/2/7/102707030/hcl_factory_tour_4_sametime_v11.pdf

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 - a. **Type of data:** IP address and related information such as location and internet provider, browser and content type, version and settings, viewed content and activities.

<https://www.hcltechsw.com/wps/portal/legal/privacy>

	<p>Data collected through webforms and when you contact us directly:</p> <p>a. Type of data: depending on the webform and content of your communication to us, this includes business contact details, content of <u>your communication, information you have received and about interactions with us, as well as information about how you use our website</u>, interests in our products and services, and any publicly available information relevant from a b2b perspective (such as public information about the company you represent and your official position).</p> <p>b. Purpose: to provide you with requested information and respond to your queries as well as for direct marketing of our services and products.</p> <p>https://www.hcltechsw.com/wps/portal/legal/privacy</p>
<p>(a) the system is adapted to receive VoIP communications from multiple VoIP enabled wireless devices;</p>	<p>The system utilized by the accused instrumentality is the system which is adapted to receive VoIP communications (e.g., voice calling over IP network) from multiple VoIP enabled wireless devices (e.g., user devices such as smartphones enabled with Sametime smartphone application).</p> <p>The accused instrumentality provides voice calling functionality over IP network between users.</p> <div data-bbox="705 742 2049 1289">  </div> <p>https://www.hcltechsw.com/products/sametime</p>



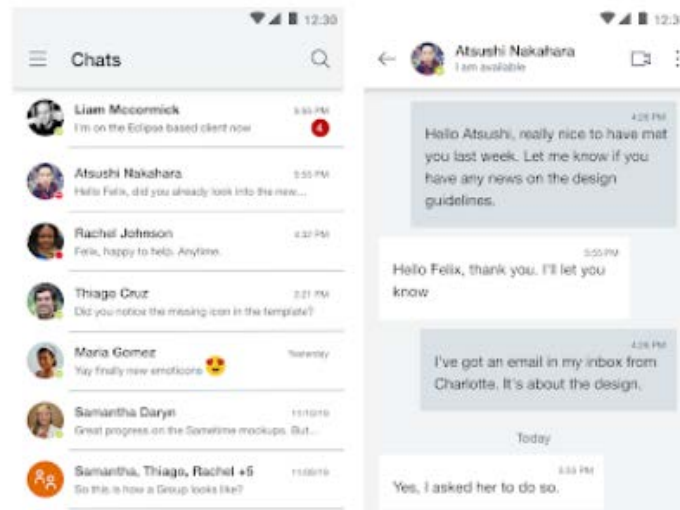
HCL Sametime

HCL Software Communication

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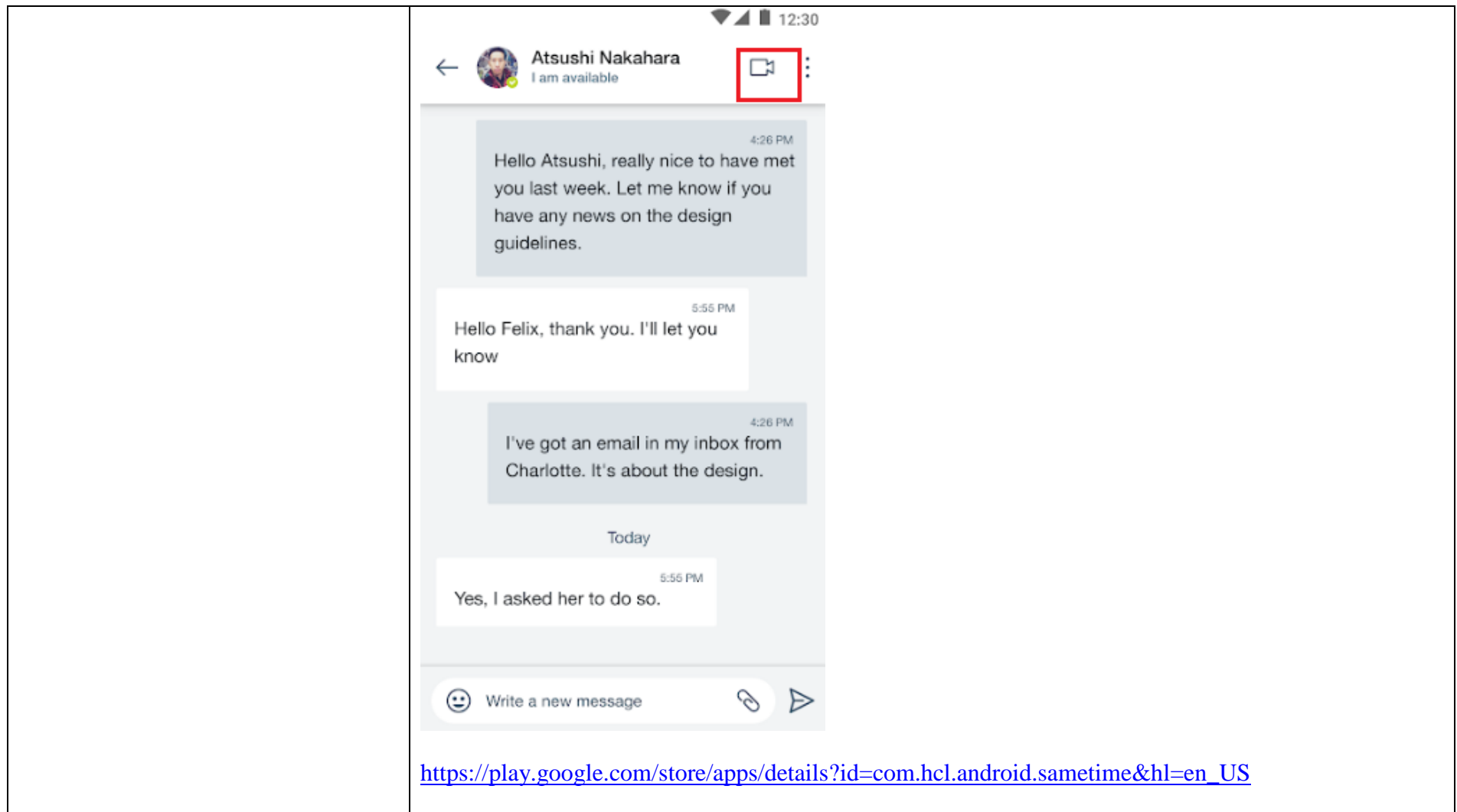
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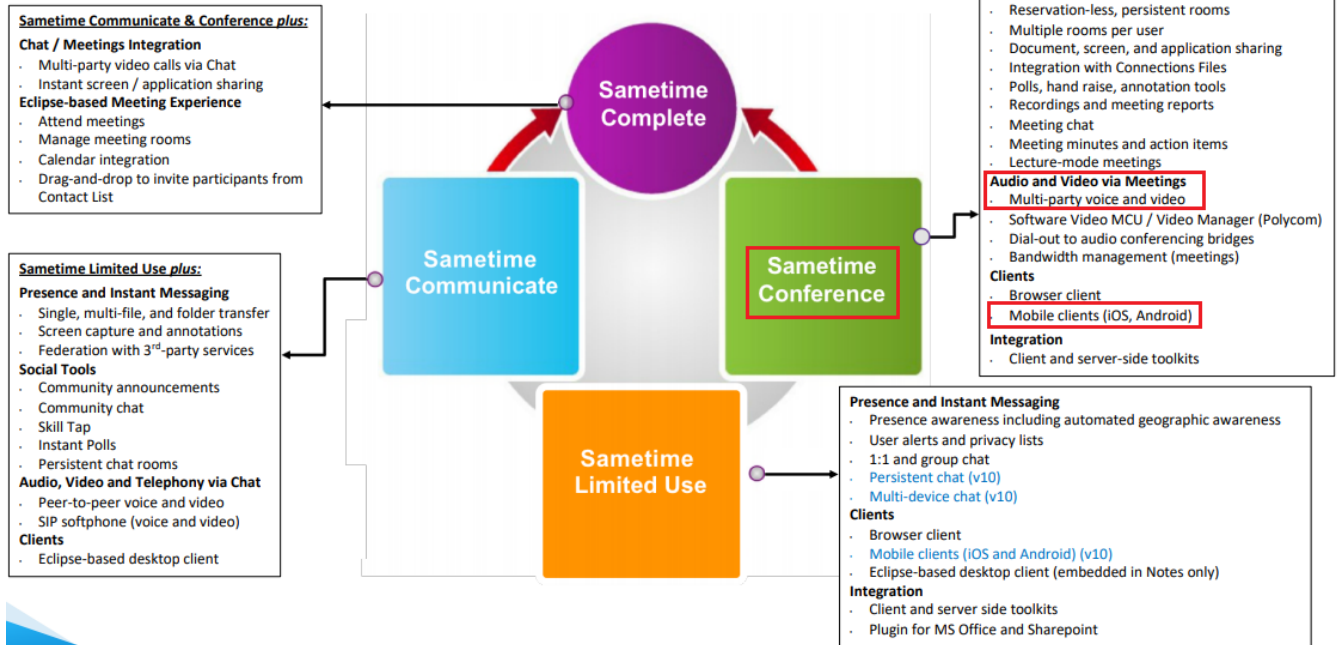
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The accused instrumentality performs voice calling over IP network.



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Audio and video meeting support for mobile users

IBM® Sametime® Mobile Meetings clients connect to the Sametime Proxy Server for audio and video support. How they connect is determined by the Meeting Server configuration and whether they connect through an authenticating proxy.

If the Meeting Server configuration on the mobile client uses an authenticating proxy (also called a reverse proxy), it connects to the Sametime Proxy server using the same authenticating proxy address, port, and credentials. Therefore the authenticating proxy should be configured to direct traffic to the appropriate server, either by using the Client-Type in the HTTP header (meetings traffic uses the STM Meetings value, and Sametime proxy traffic uses the Sametime Mobile value) or by using the URL path (meetings traffic uses a path that begins with /stmeetings, while the Sametime Proxy uses /stwebapi).

If the Sametime Proxy Server must be on a different authenticating proxy address or port, you must add the following custom configuration parameter to the Meeting Server configuration:

https://help.hcltechsw.com/sametime/10.0/config/config_meet_props_proxy_av.html

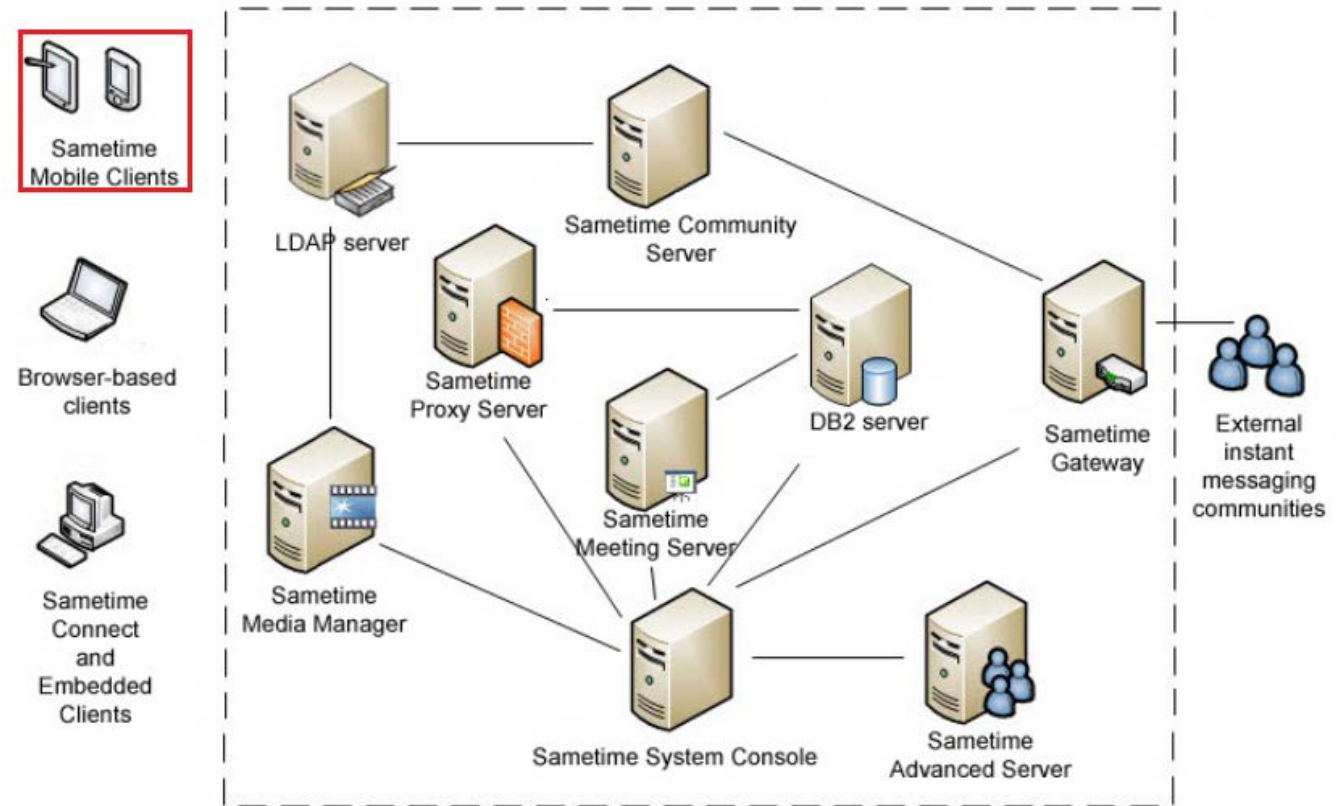
Sametime Meeting Server configuration keys for mobile Android users

Add any of these custom configuration keys to the Sametime® Meeting Server to apply to meeting participants using Android mobile devices. Default values are assumed for any configuration keys that are not present.

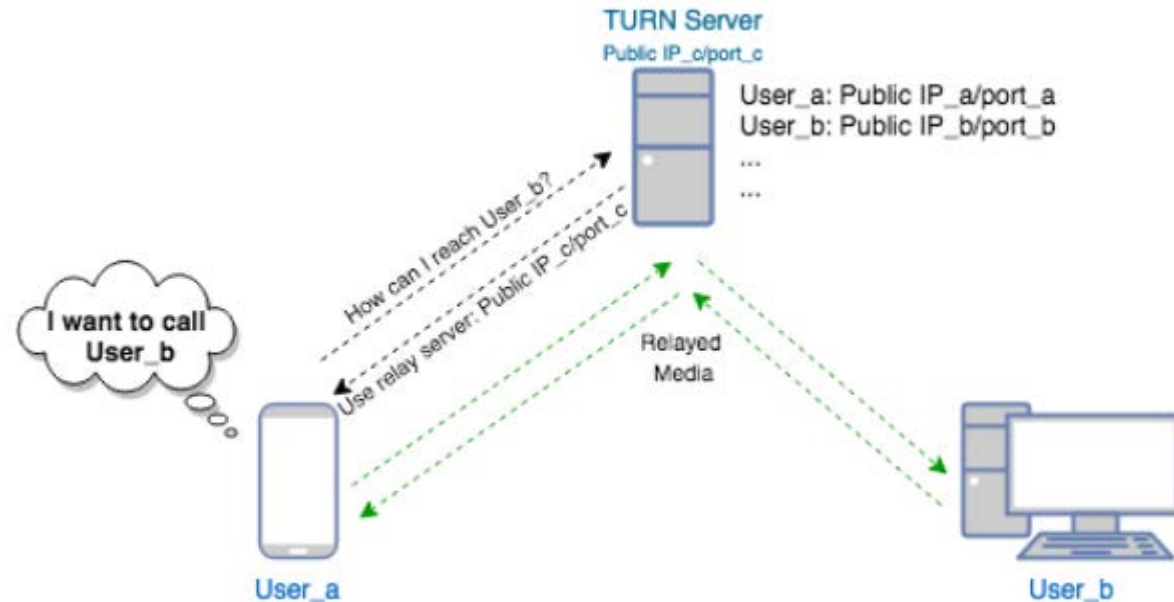
✓ Table 1. Android configuration key values

Configuration key	Default configuration value	Description
mobile.Android.currentVersion	Blank - no version checking is done Sample Values <ul style="list-style-type: none"> 8.5.2.4.201306101200 (gives users running clients older than 8.5.2.4 Build 201306101200 the option to upgrade to the version available on the install site) 9.0.0.0 (gives users running clients older than 9.0.0.0 the 	When an Android client joins a room, this value will be read from the associated meeting server configuration and compared with the client version the user is running. If the user is running a client older than that specified by <code>mobile.Android.currentVersion</code> but newer or equal to <code>mobile.Android.minVersion</code> , the user will be presented with an option to upgrade their client to the latest version available at the install site specified by the <code>mobile.Android.installAddress</code> parameter. The upgrade is optional, so the user can simply cancel the upgrade message and continue joining the meeting.

https://help.hcltechsw.com/sametime/10.0/config/config_meet_props_mobile_android.html



https://help.hcltechsw.com/sametime/10.0/plan/over_server_arch.html






<https://www.routerfreak.com/how-voip-apps-skype-whatsapp-facebook-messenger-work/>

(b) the system enables access to information in one or more databases;

The system utilized by the accused instrumentality is the system which enables access to information in one or more databases.

Upon information and belief, when a user initiate a call request for a contact, the system utilized by the accused instrumentality access one or more databases associated with Sametime server to determine the user identification and/or device identification corresponding to the called contact. The system determines the status of the contacted user's device and forwards the call to the corresponding IP address associated with the contacted user.

The system updates the user's activity and log information in the corresponding databases.

	<div data-bbox="719 204 792 272"></div> <div data-bbox="808 209 1198 268"><h1>HCL Sametime</h1></div> <div data-bbox="1856 213 2051 240">Resources  sc</div> <div data-bbox="712 384 1292 509"><h2>Secure conversations across every device.</h2></div> <div data-bbox="712 525 1415 628"><p>The proven and trusted persistent chat platform is being rebuilt for how today's modern organizations need to be working — nimbly, securely, and remotely.</p></div> <div data-bbox="761 697 965 724">SCHEDULE DEMO</div> <div data-bbox="1473 323 2051 735"></div> <div data-bbox="701 772 1328 812">https://www.hcltechsw.com/products/sametime</div>
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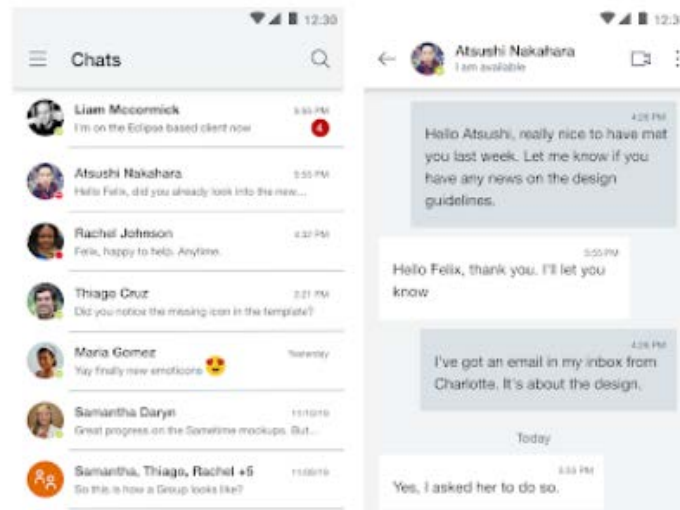
HCL Sametime

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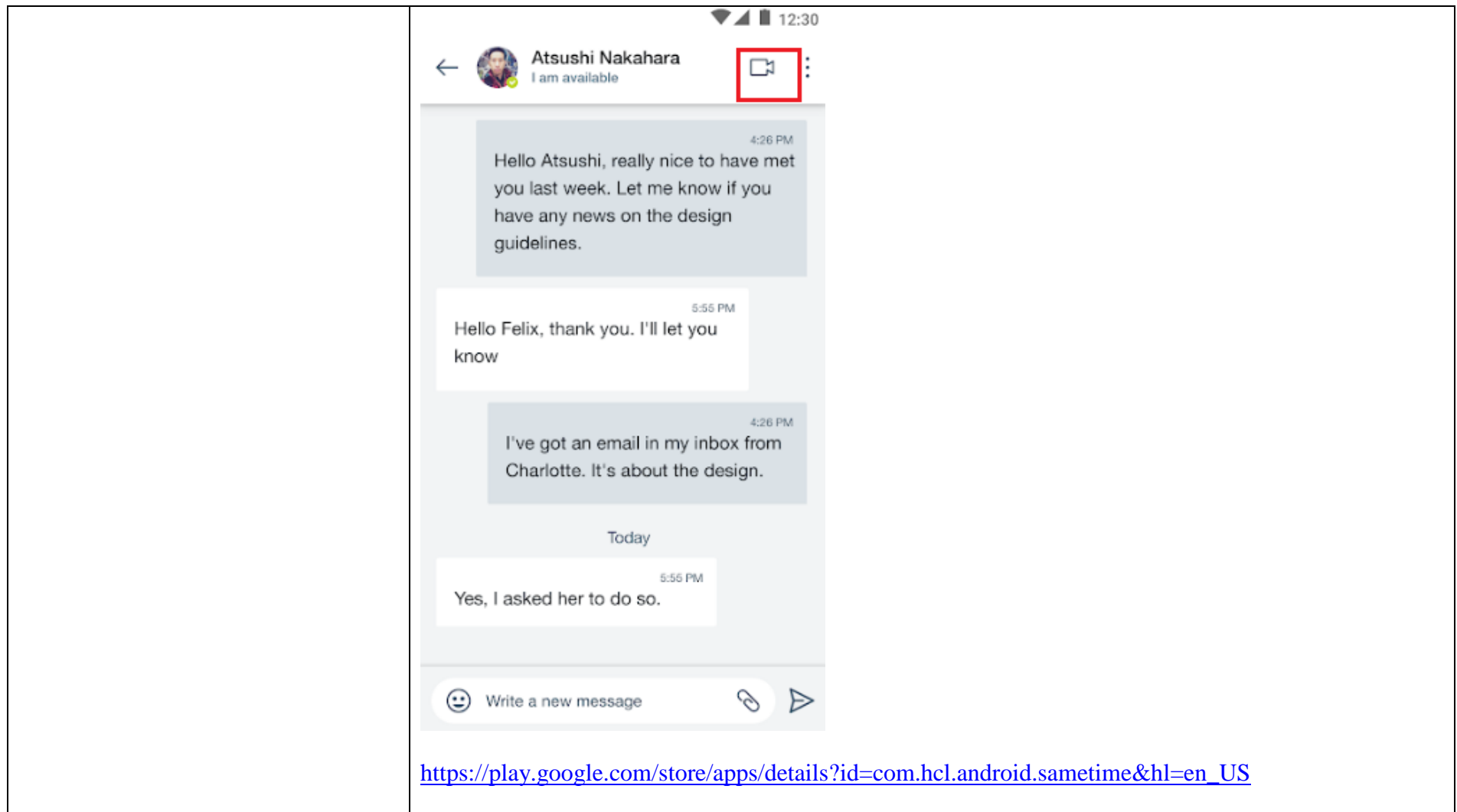
 This app is compatible with your device.

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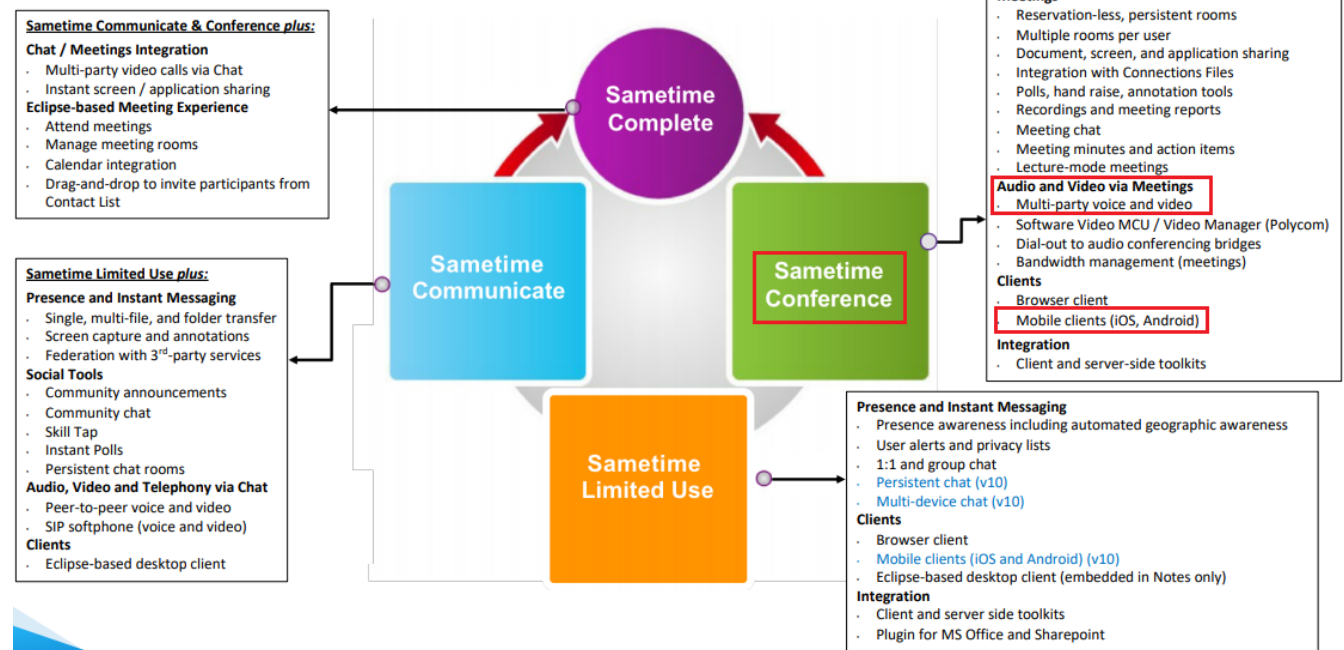
https://play.google.com/store/apps/details?id=com.hcl.android.sametime&hl=en_US

The accused instrumentality performs voice calling over IP network.



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<p>(c) the system is capable of extracting and reporting dynamically the “VoIP address or return path” and all associated information from each incoming data communication from any “VoIP enabled wireless device registered to the system” into a database(s) associated with each corresponding registered VoIP enabled wireless device user account;</p>	<p>The system utilized by the accused instrumentality is the system which is capable of extracting and reporting dynamically the “VoIP address or return path” (e.g., IP address of a user device enabled with Sametime smartphone application) and all associated information (e.g., all information collected by the accused instrumentality) from each incoming data communication from any “VoIP enabled wireless device registered to the system” (e.g., a user device such as a smartphone enabled with Sametime smartphone application) into a database(s) associated with each corresponding registered VoIP enabled wireless device (e.g., a user device such as a smartphone enabled with Sametime smartphone application) user account.</p> <p>The accused instrumentality extracts and updates a user device enabled with Sametime smartphone application’s IP address. The accused instrumentality stores the IP address, call log information, device identifiers in the databases corresponding to the user.</p>

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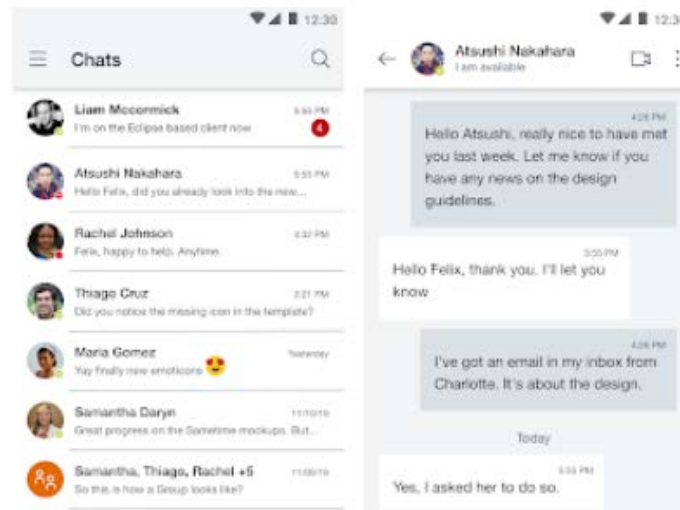
HCL Sametime

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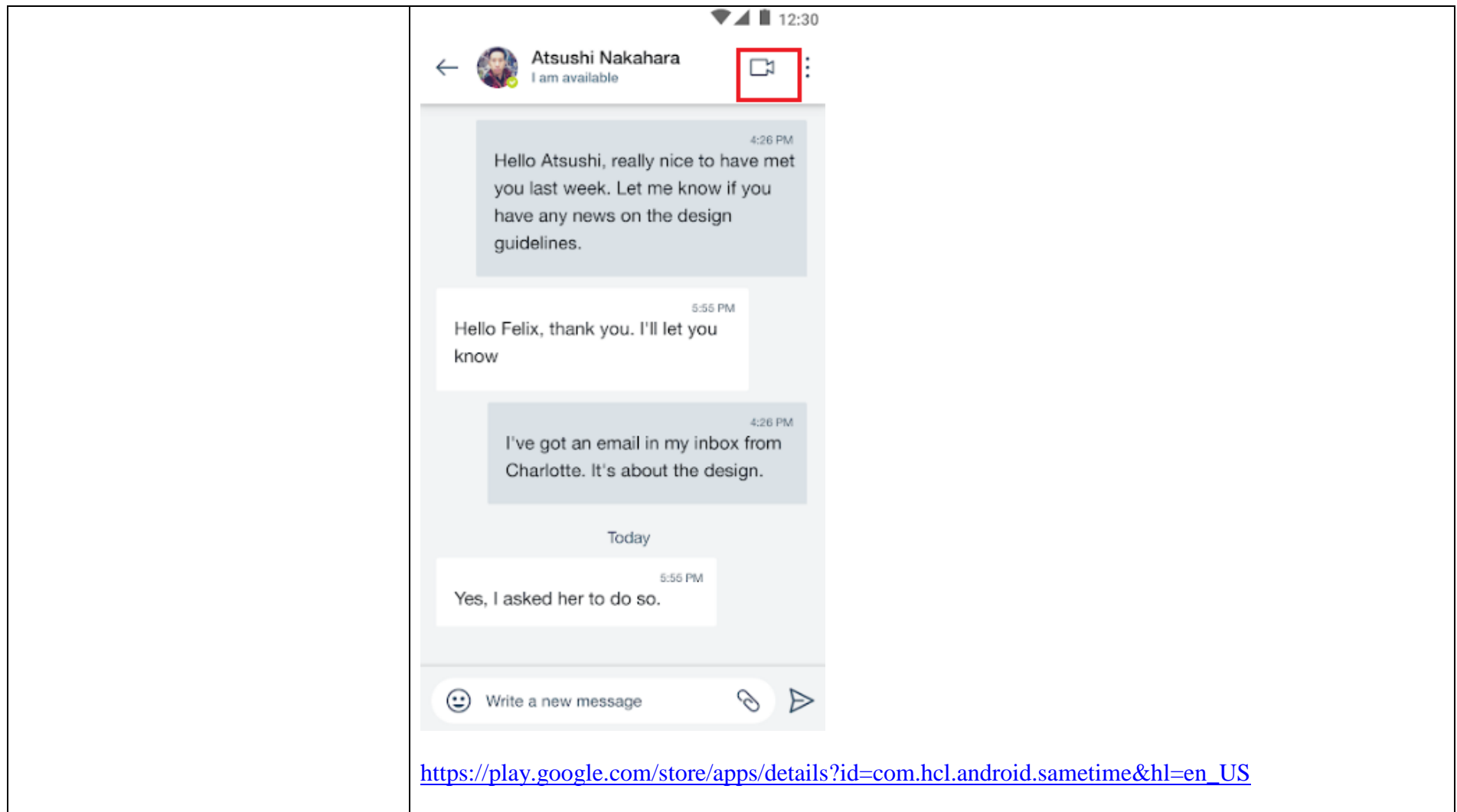
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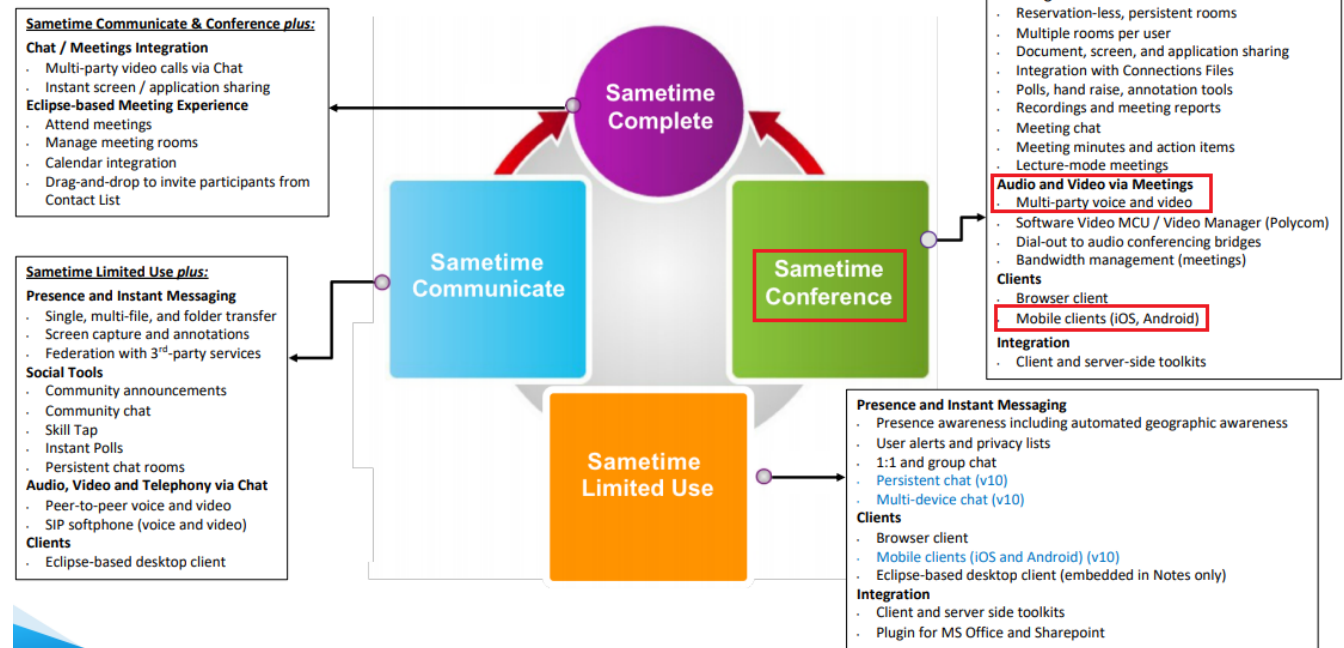
https://play.google.com/store/apps/details?id=com.hcl.android.sametime&hl=en_US

The accused instrumentality performs voice calling over IP network.



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(d) the system is capable of extracting a specific “VoIP address or return path” and all associated information corresponding to a specific registered VoIP enabled wireless device user account from the system accessible database(s) and communicating with each specific VoIP enabled wireless device registered to the system through each specific “VoIP address or return path”;	<p>The accused system utilized by the accused instrumentality is the system which is capable of extracting a specific “VoIP address or return path” (e.g., an IP address of a user device such as a smartphone enabled with Sametime smartphone application) and all associated information (e.g., device information, hardware information, online status information, etc.) corresponding to a specific registered VoIP enabled wireless device user account (e.g., a user device such as a smartphone enabled with Sametime smartphone application) from the system accessible database(s) and communicating with each specific VoIP enabled wireless device (e.g., user device of the called contact such as a smartphone enabled with Sametime smartphone application) registered to the system through each specific “VoIP address or return path” (e.g., an IP address of the user device of the called contact such as a smartphone enabled with Sametime smartphone application).</p> <p>The accused instrumentality provides voice calling functionality over IP network between users. The accused instrumentality extracts and updates IP addresses of the user devices in its databases. The accused instrumentality enables a user to call a contact by extracting the contacted user’s IP address and initiating call procedure corresponding to that IP address.</p>

	<div data-bbox="719 204 2042 742"><h1 data-bbox="817 215 1191 263">HCL Sametime</h1><p data-bbox="1863 220 2042 242">Resources  </p><h2 data-bbox="721 391 1288 507">Secure conversations across every device.</h2><p data-bbox="721 534 1415 630">The proven and trusted persistent chat platform is being rebuilt for how today's modern organizations need to be working — nimbly, securely, and remotely.</p><p data-bbox="766 702 958 726">SCHEDULE DEMO</p></div> <div data-bbox="1478 327 2042 734"></div> <div data-bbox="712 778 1326 813"><p>https://www.hcltechsw.com/products/sametime</p></div>
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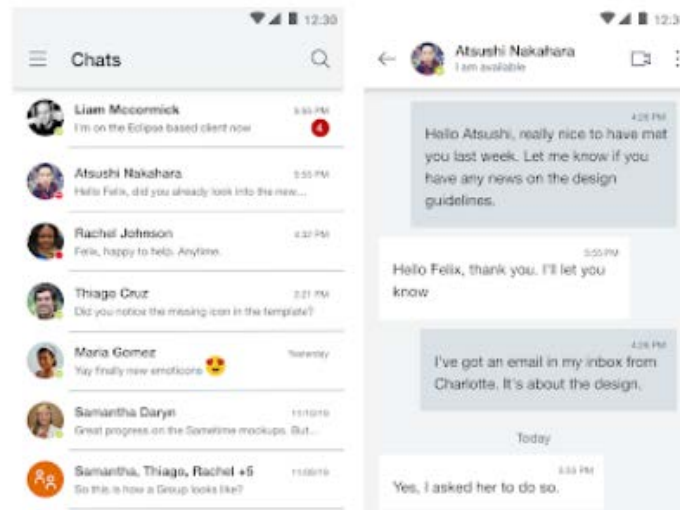
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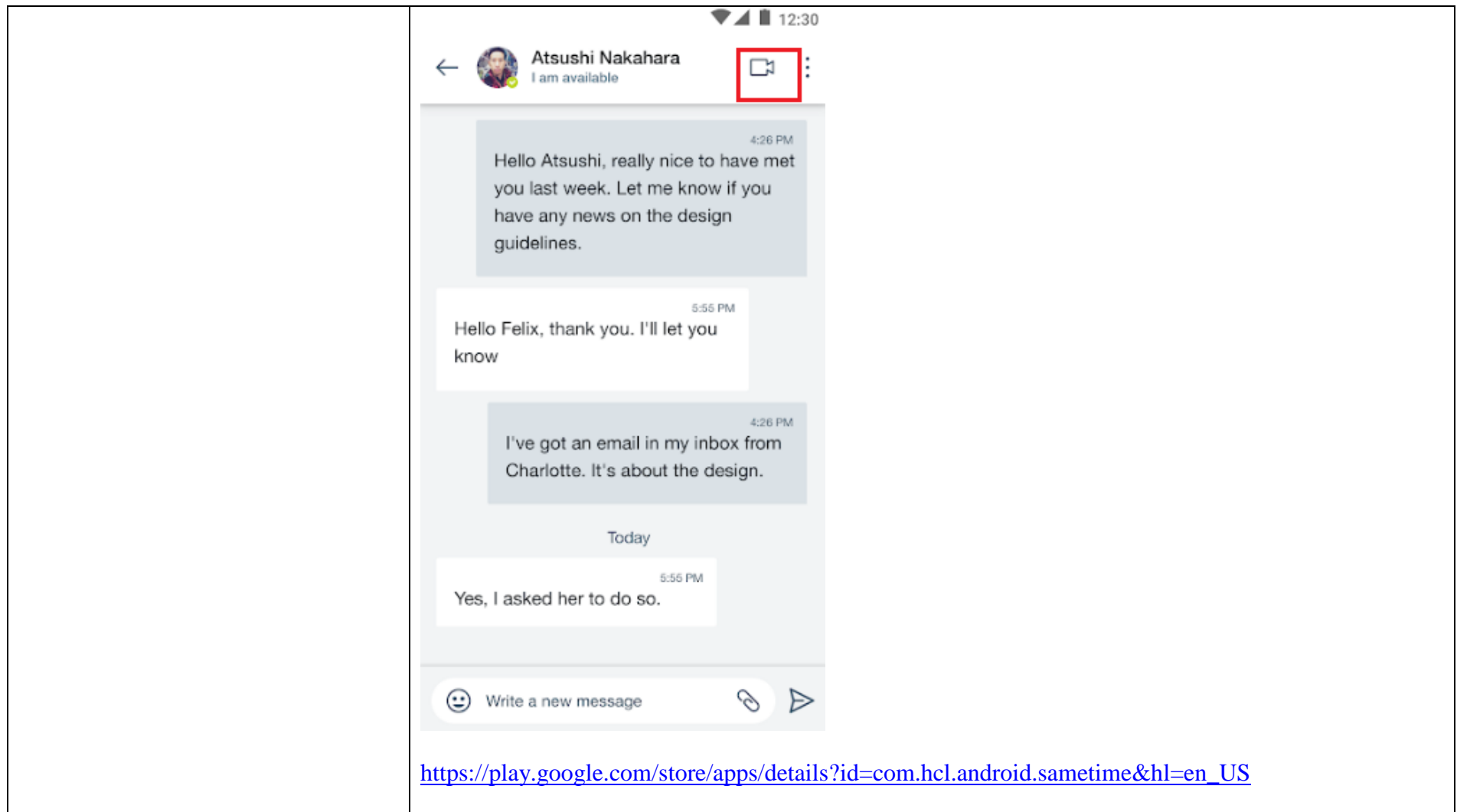
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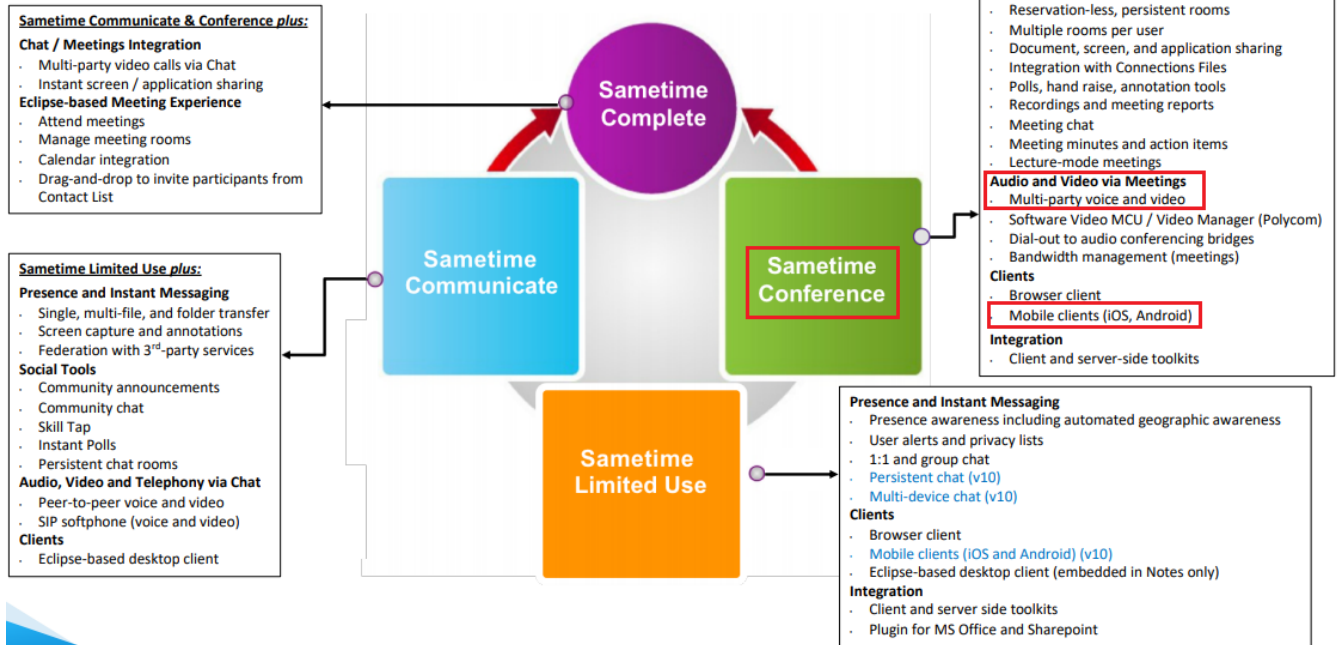
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Audio and video meeting support for mobile users

IBM® Sametime® Mobile Meetings clients connect to the Sametime Proxy Server for audio and video support. How they connect is determined by the Meeting Server configuration and whether they connect through an authenticating proxy.

If the Meeting Server configuration on the mobile client uses an authenticating proxy (also called a reverse proxy), it connects to the Sametime Proxy server using the same authenticating proxy address, port, and credentials. Therefore the authenticating proxy should be configured to direct traffic to the appropriate server, either by using the Client-Type in the HTTP header (meetings traffic uses the STM Meetings value, and Sametime proxy traffic uses the Sametime Mobile value) or by using the URL path (meetings traffic uses a path that begins with /stmeetings, while the Sametime Proxy uses /stwebapi).

If the Sametime Proxy Server must be on a different authenticating proxy address or port, you must add the following custom configuration parameter to the Meeting Server configuration:

https://help.hcltechsw.com/sametime/10.0/config/config_meet_props_proxy_av.html

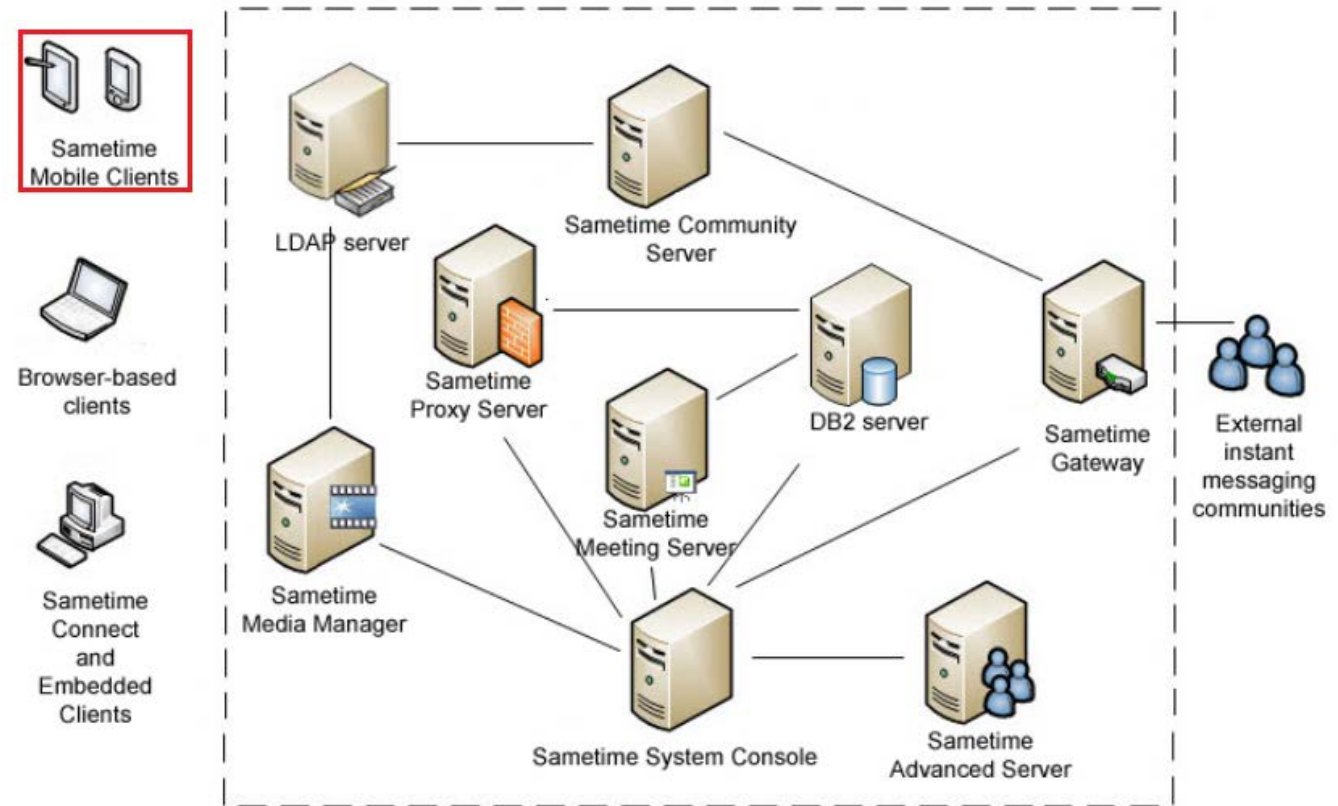
Sametime Meeting Server configuration keys for mobile Android users

Add any of these custom configuration keys to the Sametime® Meeting Server to apply to meeting participants using Android mobile devices. Default values are assumed for any configuration keys that are not present.

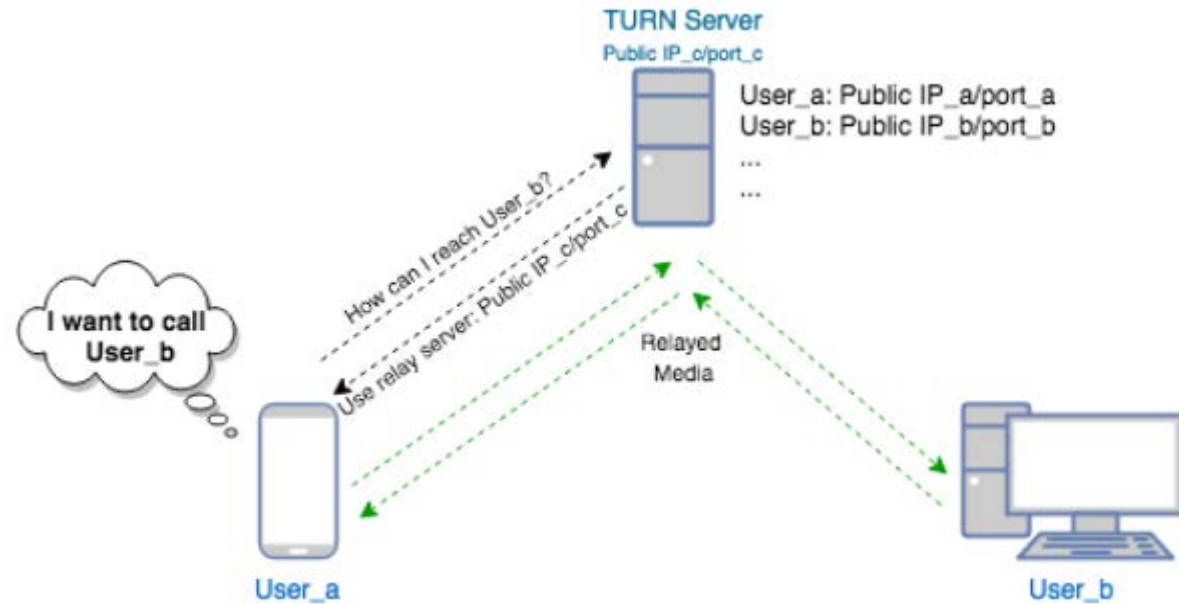
✓ Table 1. Android configuration key values

Configuration key	Default configuration value	Description
mobile.Android.currentVersion	Blank - no version checking is done Sample Values <ul style="list-style-type: none"> 8.5.2.4.201306101200 (gives users running clients older than 8.5.2.4 Build 201306101200 the option to upgrade to the version available on the install site) 9.0.0.0 (gives users running clients older than 9.0.0.0 the 	When an Android client joins a room, this value will be read from the associated meeting server configuration and compared with the client version the user is running. If the user is running a client older than that specified by <code>mobile.Android.currentVersion</code> but newer or equal to <code>mobile.Android.minVersion</code> , the user will be presented with an option to upgrade their client to the latest version available at the install site specified by the <code>mobile.Android.installAddress</code> parameter. The upgrade is optional, so the user can simply cancel the upgrade message and continue joining the meeting.

https://help.hcltechsw.com/sametime/10.0/config/config_meet_props_mobile_android.html



https://help.hcltechsw.com/sametime/10.0/plan/over_server_arch.html






<https://www.routerfreak.com/how-voip-apps-skype-whatsapp-facebook-messenger-work/>

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 - a. **Type of data:** IP address and related information such as location and internet provider, browser and content type, version and settings, viewed content and activities.

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	<p>Data collected through webforms and when you contact us directly:</p> <p>a. Type of data: depending on the webform and content of your communication to us, this includes business contact details, content of <u>your communication, information you have received and about interactions with us, as well as information about how you use our</u> website, interests in our products and services, and any publicly available information relevant from a b2b perspective (such as public information about the company you represent and your official position).</p> <p>b. Purpose: to provide you with requested information and respond to your queries as well as for direct marketing of our services and products.</p> <p>https://www.hcltechsw.com/wps/portal/legal/privacy</p>
<p>(e) in which the VoIP enabled wireless device registered to the server incorporates the software module, which at certain time intervals authenticates and connects to the server which is part of the system, and</p>	<p>The system utilized by the accused instrumentality practices such that the VoIP enabled wireless device (e.g., a user device such as a smartphone enabled with Sametime smartphone application) registered to the server (e.g., Sametime server) incorporates the software module (e.g., Sametime smartphone application), which at certain time intervals (e.g., Sametime smartphone app polls the Sametime server after regular intervals) authenticates and connects to the server (e.g., Sametime server) which is part of the system.</p> <p>AS shown below, a user verifies its phone number with the system utilized by the accused instrumentality to access the service provided by the system. The system authenticates the user and connects the user to the Sametime server.</p>

	<div data-bbox="719 204 792 272"></div> <div data-bbox="808 209 1198 268"><h1>HCL Sametime</h1></div> <div data-bbox="1856 213 2058 240">Resources  sc</div> <div data-bbox="712 384 1292 510"><h2>Secure conversations across every device.</h2></div> <div data-bbox="712 526 1415 630"><p>The proven and trusted persistent chat platform is being rebuilt for how today's modern organizations need to be working — nimbly, securely, and remotely.</p></div> <div data-bbox="761 699 963 726">SCHEDULE DEMO</div> <div data-bbox="1473 325 2047 735"></div> <div data-bbox="701 774 1326 813">https://www.hcltechsw.com/products/sametime</div>
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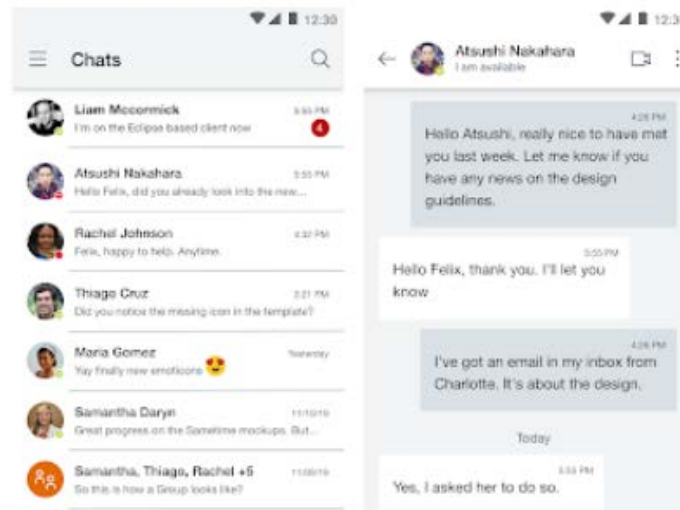
HCL Sametime

HCL Software Communication

3+

 This app is compatible with your device.

 Add to Wishlist



https://play.google.com/store/apps/details?id=com.hcl.android.sametime&hl=en_US

Logging in

You must start HCL Sametime® before logging in.

About this task

To find Sametime on your device, look for the Sametime icon:



After you launch Sametime, the Login panel is displayed.

https://help.hcltechsw.com/sametime/11.0.0/android/t_loggingin.html

After you launch Sametime, the Login panel is displayed.

To log in:

Procedure

1. Ensure a Sametime community has been created and configured. Your administrator should have provided you these details.
2. Enter your credentials in the Email Address field and tap the Log In button. If your login process is by password the Password field will then appear. If it uses your corporate credentials you will be redirected to your corporate web page to complete the login process.
3. Tap the "I am available" status if you wish to change your availability upon login. The default status is Available.
4. Tap Log In. Sametime will authenticate with the server and begin retrieving your chats.
5. The Chats screen will display with your active chats.

https://help.hcltechsw.com/sametime/11.0.0/android/t_loggingin.html

Upon information and belief, a user device enabled with Sametime smartphone application periodically re-engages with the Sametime server for any further updates. As shown below, an android application periodically authenticates a user device with the help of an account manager or token. The Sametime smartphone server authenticates the user device enabled with Sametime smartphone application periodically.

Regular Repeated Pings

For apps that require data updates at regular intervals, tools like Google Cloud Messenger should be used to push this information down to the app. Building your own service often results in polling in the background by setting an alarm for every x minutes, then waking up the radio and downloading your data. This does not seem like a big deal, but imagine an app that pings the server for updates every 3 minutes. Extrapolate this out—your app will make 480 connections every 24 hours. Throw in a 10 second state machine timer, and now these “harmless” connections are

<https://books.google.co.in/books?id=K5aJCgAAQBAJ&pg=PT279&lpg=PT279#v=onepage&q&f=false>

The optimal frequency of regular updates will vary based on device state, network connectivity, user behavior, and explicit user preferences.

[Optimizing battery life](#) discusses how to build battery-efficient apps that modify their refresh frequency based on the state of the host device. That includes disabling background service updates when you lose connectivity and reducing the rate of updates when the battery level is low.

This lesson will examine how your refresh frequency can be varied to best mitigate the effect of background updates on the underlying wireless radio state machine.

Use Firebase Cloud Messaging as an alternative to polling

Every time your app polls your server to check if an update is required, you activate the wireless radio, drawing power unnecessarily, for up to 20 seconds on a typical 3G connection.

[Firebase Cloud Messaging \(FCM\)](#) is a lightweight mechanism used to transmit data from a server to a particular app instance. Using FCM, your server can notify your app running on a particular device that there is new data available for it.

Compared to polling, where your app must regularly ping the server to query for new data, this event-driven model allows your app to create a new connection only when it knows there is data to download. The model minimizes unnecessary connections and reduces latency when updating information within your app.

https://developer.android.com/training/efficient-downloads/regular_updates

Firestore Cloud Messaging

iOS Android </> C++ ↻

Firebase Cloud Messaging (FCM) is a cross-platform messaging solution that lets you reliably send messages at no cost.

Using FCM, you can notify a client app that new email or other data is available to sync. You can send notification messages to drive user re-engagement and retention. For use cases such as instant messaging, a message can transfer a payload of up to 4KB to a client app.

Using deprecated Google Cloud Messaging APIs? [Learn more](#) about how to migrate to FCM.

<https://firebase.google.com/docs/cloud-messaging/>



Applications typically try to remember the user using one of three techniques:

1. Ask the user to type in a username.
2. Retrieve a unique device ID to remember the device.
3. Retrieve a built-in account from `AccountManager`.

Option (1) is problematic. First, asking the user to type something before entering your app will automatically make your app less appealing. Second, there's no guarantee that the username chosen will be unique.

Option (2) is less onerous for the user, but it's `tricky to get right`. More importantly, it only allows you to remember the user on one device. Imagine the frustration of someone who upgrades to a shiny new device, only to find that your app no longer remembers them.

Option (3) is the preferred technique. Account Manager allows you to get information about the accounts that are stored on the user's device. As we'll see in this lesson, using Account Manager lets you remember your user, no matter how many devices the user may own, by adding just a couple of extra taps to your UI.

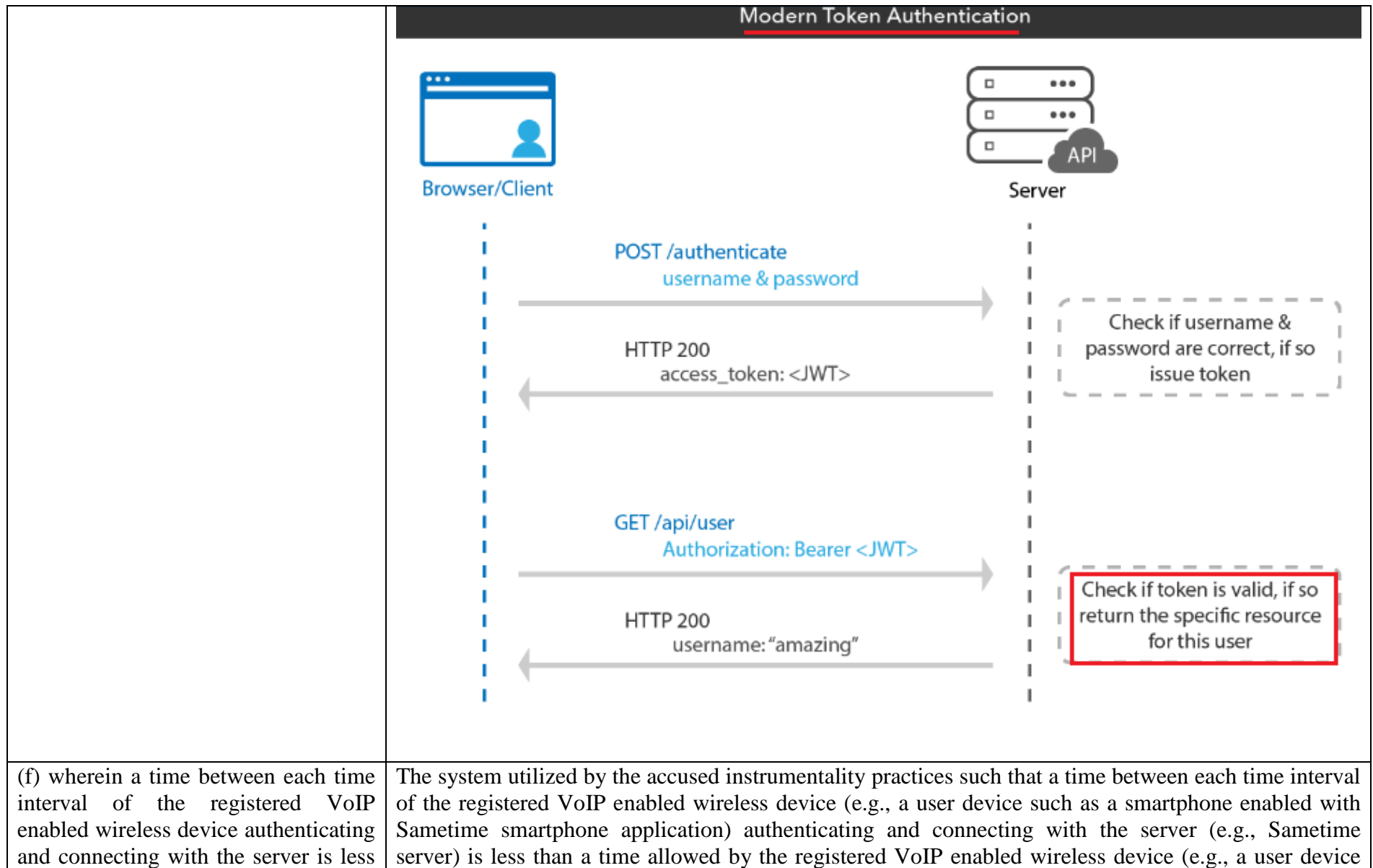
<https://developer.android.com/training/id-auth/identify>

Many servers support some notion of an *authentication token*, which can be used to authenticate a request to the server without sending the user's actual password. (Auth tokens are normally created with a separate request which does include the user's credentials.) AccountManager can generate auth tokens for applications, so the application doesn't need to handle passwords directly. Auth tokens are normally reusable and cached by AccountManager, but must be refreshed periodically. It's the responsibility of applications to *invalidate* auth tokens when they stop working so the AccountManager knows it needs to regenerate them.

Applications accessing a server normally go through these steps:

- Get an instance of AccountManager using `get(android.content.Context)`.
- List the available accounts using `getAccountsByType(String)` or `getAccountsByTypeAndFeatures(String, String[], AccountManagerCallback, Handler)`. Normally applications will only be interested in accounts with one particular *type*, which identifies the authenticator. Account *features* are used to identify particular account subtypes and capabilities. Both the account type and features are authenticator-specific strings, and must be known by the application in coordination with its preferred authenticators.

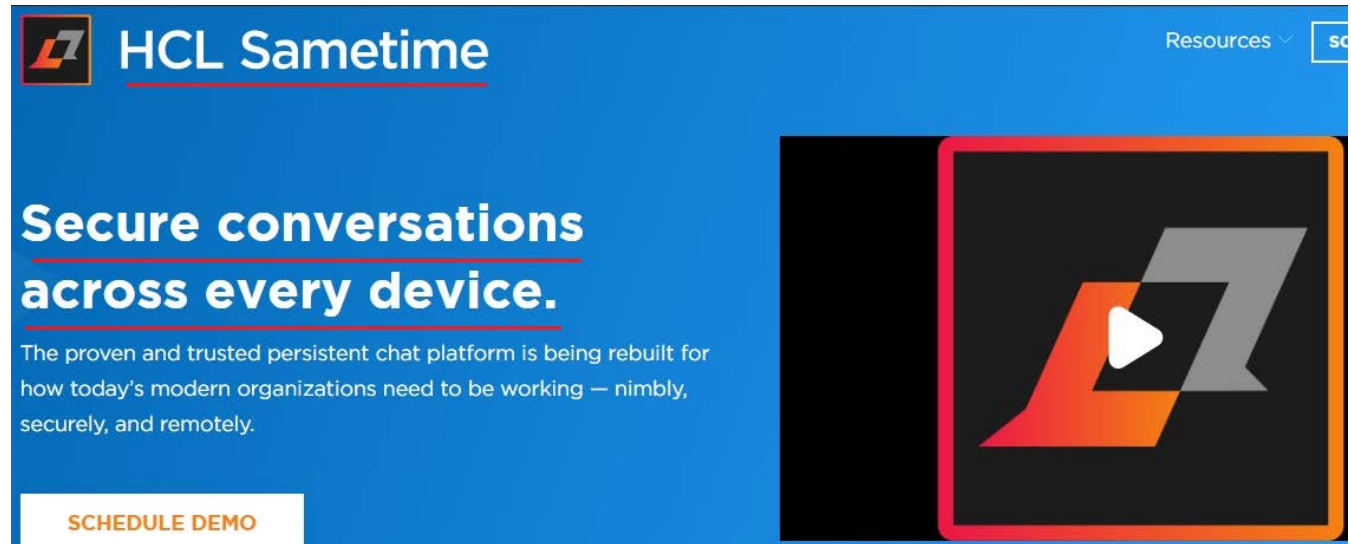
<https://developer.android.com/reference/android/accounts/AccountManager>



than a time allowed by the registered VoIP enabled wireless device to receive a response from the server.

such as a smartphone enabled with Sametime smartphone application) to receive a response from the server (e.g., Sametime server).

When a user device such as a smartphone enabled with Sametime smartphone application, during a Sametime voice call, switches from cellular network to Wi-Fi network or vice versa, the IP address of the user device changes. The accused instrumentality provides seamless and smooth voice calling functionality even when the user device changes the network. The accused instrumentality must take less time to authenticate and connect the user device with a new IP address to the Sametime server than a time allowed by the user device to receive a voice calling response from the server to ensure no data packet loss.



HCL Sametime Resources

Secure conversations across every device.

The proven and trusted persistent chat platform is being rebuilt for how today's modern organizations need to be working — nimbly, securely, and remotely.

SCHEDULE DEMO

The banner features the HCL Sametime logo in the top left, a large play button icon in the center right, and a 'SCHEDULE DEMO' button in the bottom left. The background is blue with white and orange text and graphics.

<https://www.hcltechsw.com/products/sametime>



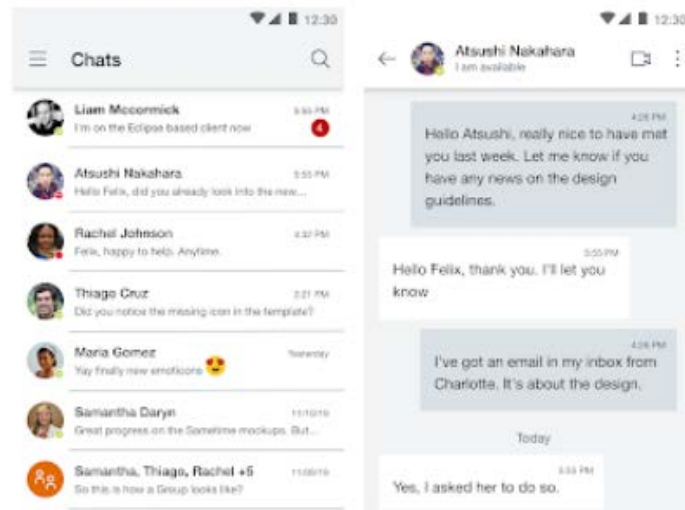
HCL Sametime

HCL Software Communication

3+

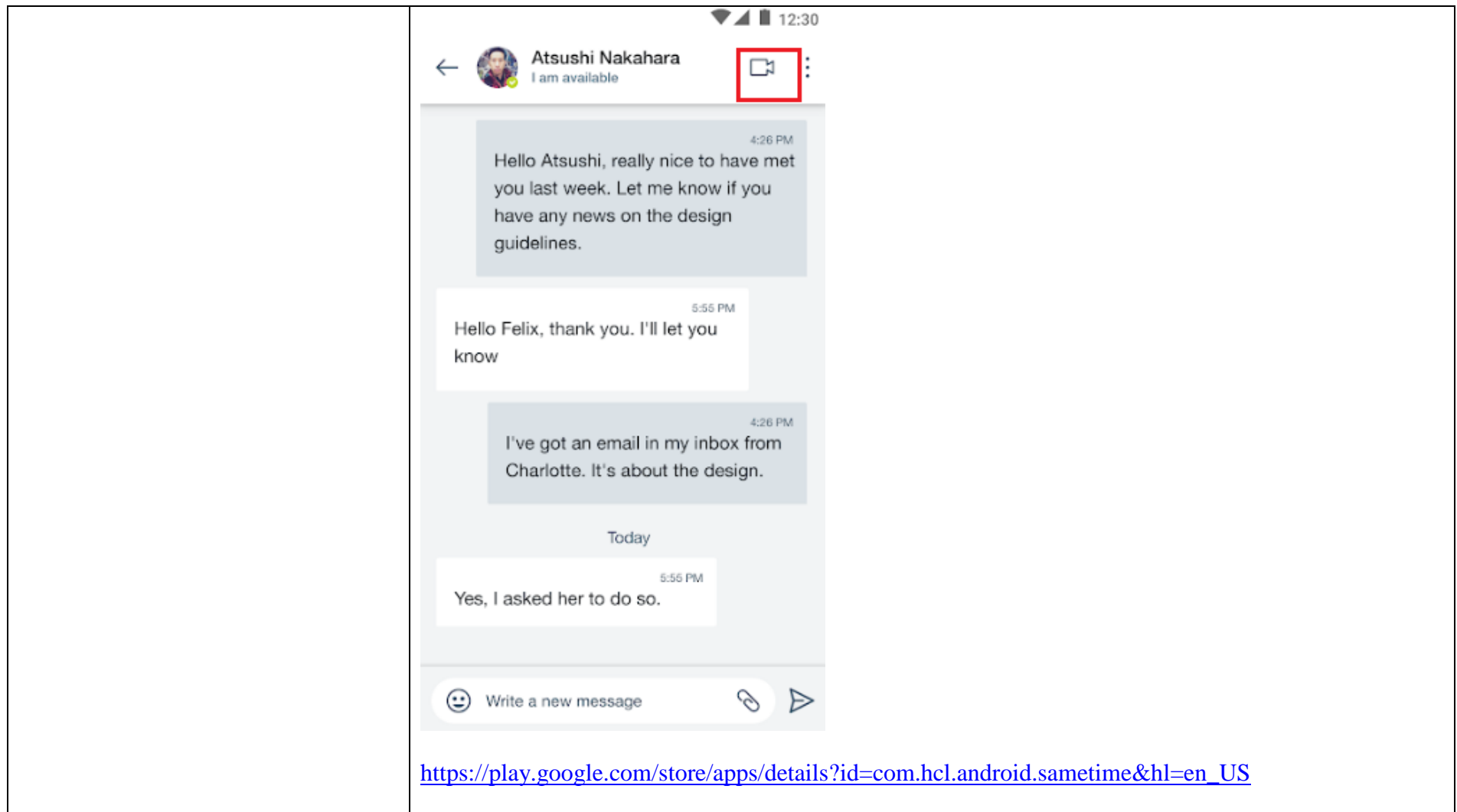
 This app is compatible with your device.

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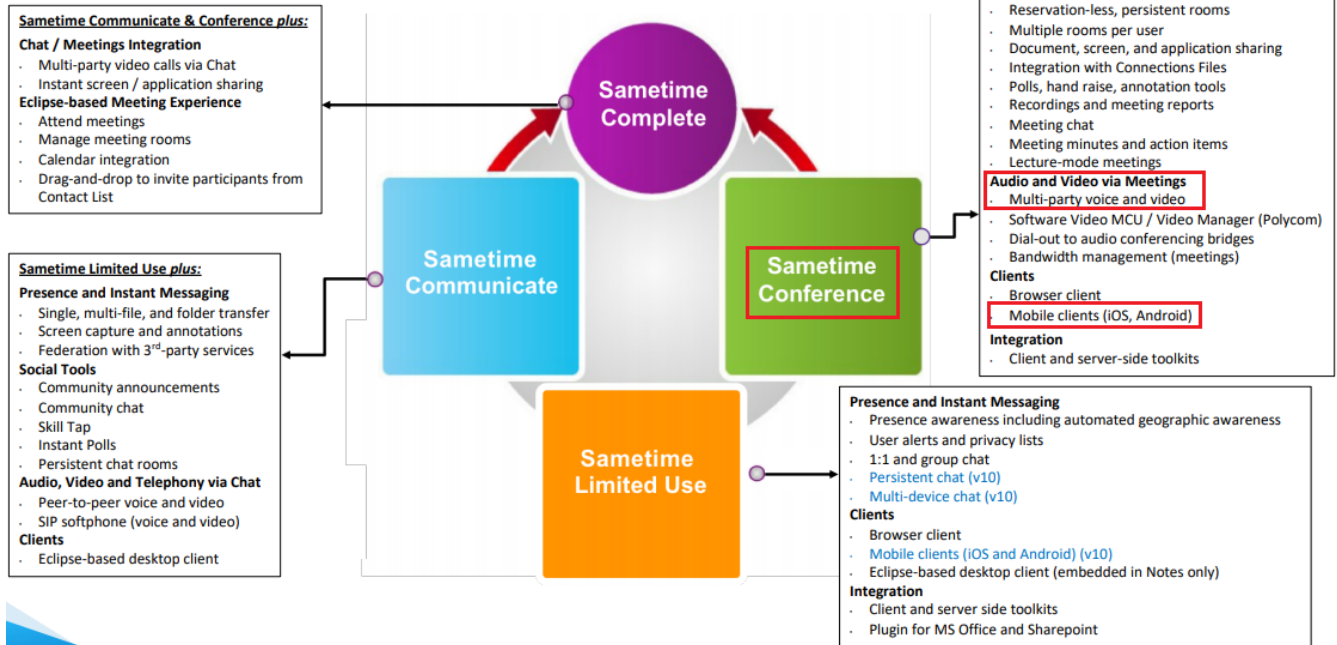
https://play.google.com/store/apps/details?id=com.hcl.android.sametime&hl=en_US

The accused instrumentality performs voice calling over IP network.



	<p>HCL Sametime is a <u>highly secure, persistent team chat app for the HCL Sametime platform. It allows users to communicate securely in real-time across devices on web, desktop or mobile.</u></p> <p>It is ideal for cross-team chat in countries with strict data privacy and gravity laws, companies in regulated industries, and government entities who need to be able to ensure the security and auditability of their data. With v11, secure conversations just got a lot easier. From a new user experience to modernized industry-standard technologies, Sametime v11 the best, most feature-rich version yet.</p> <p>HCL Sametime works with your Sametime 10 and 11 server infrastructure.</p> <p>https://play.google.com/store/apps/details?id=com.hcl.android.sametime&hl=en_US</p>
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IBM/HCL Sametime Product Family Today



https://www.cwpcollaboration.com/uploads/1/0/2/7/102707030/hcl_factory_tour_4_sametime_v11.pdf

Audio and video meeting support for mobile users

IBM® Sametime® Mobile Meetings clients connect to the Sametime Proxy Server for audio and video support. How they connect is determined by the Meeting Server configuration and whether they connect through an authenticating proxy.

If the Meeting Server configuration on the mobile client uses an authenticating proxy (also called a reverse proxy), it connects to the Sametime Proxy server using the same authenticating proxy address, port, and credentials. Therefore the authenticating proxy should be configured to direct traffic to the appropriate server, either by using the Client-Type in the HTTP header (meetings traffic uses the STM Meetings value, and Sametime proxy traffic uses the Sametime Mobile value) or by using the URL path (meetings traffic uses a path that begins with /stmeetings, while the Sametime Proxy uses /stwebapi).

If the Sametime Proxy Server must be on a different authenticating proxy address or port, you must add the following custom configuration parameter to the Meeting Server configuration:

https://help.hcltechsw.com/sametime/10.0/config/config_meet_props_proxy_av.html

Sametime Meeting Server configuration keys for mobile Android users

Add any of these custom configuration keys to the Sametime® Meeting Server to apply to meeting participants using Android mobile devices. Default values are assumed for any configuration keys that are not present.

✓ Table 1. Android configuration key values

Configuration key	Default configuration value	Description
mobile.Android.currentVersion	Blank - no version checking is done Sample Values <ul style="list-style-type: none"> 8.5.2.4.201306101200 (gives users running clients older than 8.5.2.4 Build 201306101200 the option to upgrade to the version available on the install site) 9.0.0.0 (gives users running clients older than 9.0.0.0 the 	When an Android client joins a room, this value will be read from the associated meeting server configuration and compared with the client version the user is running. If the user is running a client older than that specified by <code>mobile.Android.currentVersion</code> but newer or equal to <code>mobile.Android.minVersion</code> , the user will be presented with an option to upgrade their client to the latest version available at the install site specified by the <code>mobile.Android.installAddress</code> parameter. The upgrade is optional, so the user can simply cancel the upgrade message and continue joining the meeting.

https://help.hcltechsw.com/sametime/10.0/config/config_meet_props_mobile_android.html

As shown below, an exemplary application manages network connectivity.

Class that answers queries about the state of network connectivity. It also notifies applications when network connectivity changes.

The primary responsibilities of this class are to:

1. Monitor network connections (Wi-Fi, GPRS, UMTS, etc.)
2. Send broadcast intents when network connectivity changes
3. Attempt to "fail over" to another network when connectivity to a network is lost
4. Provide an API that allows applications to query the coarse-grained or fine-grained state of the available networks
5. Provide an API that allows applications to request and select networks for their data traffic

https://developer.android.com/reference/android/net/ConnectivityManager#EXTRA_IS_FAILOVER

If this is a connection that was the result of failing over from a disconnected network, then the FAILOVER_CONNECTION boolean extra is set to true.

For a loss of connectivity, if the connectivity manager is attempting to connect (or has already connected) to another network, the NetworkInfo for the new network is also passed as an extra. This lets any receivers of the broadcast know that they should not necessarily tell the user that no data traffic will be possible. Instead, the receiver should expect another broadcast soon, indicating either that the failover attempt succeeded (and so there is still overall data connectivity), or that the failover attempt failed, meaning that all connectivity has been lost.

https://developer.android.com/reference/android/net/ConnectivityManager#EXTRA_IS_FAILOVER

Detect connection changes

The final piece of the puzzle is the `BroadcastReceiver` subclass, `NetworkReceiver`. When the device's network connection changes, `NetworkReceiver` intercepts the action `CONNECTIVITY_ACTION`, determines what the network connection status is, and sets the flags `wifiConnected` and `mobileConnected` to true/false accordingly. The upshot is that the next time the user returns to the app, the app will only download the latest feed and update the display if `NetworkActivity.refreshDisplay` is set to `true`.

Setting up a `BroadcastReceiver` that gets called unnecessarily can be a drain on system resources. The sample application registers the `BroadcastReceiver` `NetworkReceiver` in `onCreate()`, and it unregisters it in `onDestroy()`. This is more lightweight than declaring a `<receiver>` in the manifest. When you declare a `<receiver>` in the manifest, it can wake up your app at any time, even if you haven't run it for weeks. By registering and unregistering `NetworkReceiver` within the main activity, you ensure that the app won't be woken up after the user leaves the app. If you do declare a `<receiver>` in the manifest and you know exactly where you need it, you can use `setComponentEnabledSetting()` to enable and disable it as appropriate.

<https://developer.android.com/training/basics/network-ops/managing>